Space Weather Forecast

Issued on Sunday, 04 June 2023 at 01:22 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares with a risk of Minor-Moderate radio blackouts throughout.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low, with a number of low energy Common-class flares observed during the last 24 hours. The main source of these have been from two complex regions, one in the southwest and one in the southeast quadrant. In total there are nine sunspot regions on the disc, with all the remaining groups simple and inactive unipolar or bipolar regions. No Earth-directed CMEs have been observed on available imagery.

Solar Wind / Geomagnetic Activity: Solar winds have remained at ambient levels through the last 24 hours. Total magnetic field strength was weak, but with a sharp rise to moderate levels at the end of the period. The north-south component also reached a positive moderate peak at the end of the period after previously varying weakly. Geomagnetic activity was mainly Quiet with one Active interval.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is likely to remain Low with only two high risk, but comparatively inactive regions on the visible disc. One of these regions is due to rotate off the disc in the next two days, but further active regions are likely to rotate onto the eastern limb during the same period. Based on this analysis there is a chance of Moderate activity and a low risk of High activity.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs forecast. Solar wind speeds are likely to remain at background levels, with a decreasing risk of fast solar winds connecting with the Earth. If these connect they could reach slightly elevated or elevated levels through 04 and 05 June. Slow solar wind conditions are the expected to connect on 06 or 07 June. Geomagnetic activity is forecast to be mainly Quiet to Unsettled, with a slight chance of Active or G1/Minor Storm intervals on 04 and 05 June.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur. However, there is an ongoing slight chance of reaching the S1/Minor Storm threshold should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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